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## OLCF/NICS Spring Cray XT5 Hex-Core Workshop

May 10-12, 2010

JICS Auditorium, Oak Ridge National Laboratory

### Draft Agenda

#### Monday, May 10, 2010

For the first day of the workshop there will be two tracks:

- Track I: intended for new XT users
- Track II: intended for more experienced XT5 users

The workshop will begin in the JICS auditorium for both tracks, and the Track I will move to JICS Bldg, Delta Crown Room (Rm 140), beginning with the 8:30 AM session, while Track II will remain in the auditorium. Both tracks will reconvene in the auditorium for lunch and again at 2:00 PM for the hands-on session.

NOTE: On Tuesday, May 11, from 3:00 – 3:45, there will be an optional tour of the Computer Room and the EVEREST Visualization facility. A sign-up sheet will be passed around on Tuesday for those who wish to attend the tour.

#### Tracks I & II Schedule:

Time	Topic	Description
8:00-8:15 AM	Morning Coffee and Continental Breakfast	Allowing participants to discuss their work for the day's meeting, speakers to check slides, session chairs to finalize introductions.

<b>Time</b>	<b>Topic</b>	<b>Description</b>
8:15-8:30 AM	<i>Welcome and Introduction to the Workshop</i> Ashley Barker, OLCF User Assistance & Outreach Group Leader	

#### Track I Schedule: Delta Crown Room (Rm 140)

<b>Time</b>	<b>Topic</b>	<b>Description</b>
8:30-9:30 AM	<i>Cray XT Architecture</i> John Levesque, Cray	Detailed description of Cray XT5 systems, including interconnect and node components
9:30-10:30 AM	<i>Introduction to AMD 6-Core CPUs for Application Developers</i> Donald Frederick, OLCF/NCCS	Detailed description of the 6-core Opteron, including memory, logic
10:30-10:45 AM	Break	
10:45-11:15 AM	<i>Introduction to Using Compilers on the XT5</i> Don Frederick, OLCF	Compiler commands, command-line options, recommendations for optimizations, etc.
Noon-1:00 PM	<i>Working Lunch: Cray Roadmap Update</i> John Levesque, Cray	
1:00-1:15 PM	<i>Overview of NICS Kraken XT5 System</i> Daniel Lucio, NICS	Overview of NICS Kraken system: node architecture, file systems, etc.
1:15-1:30 PM	<i>Overview of OLCF Jaguar XT5 System</i> Michael Matheson, OLCF	Overview of OLCF Jaguar system: node architecture, file systems, etc.
1:30-2:00 PM	<i>Introduction to Using OLCF Jaguar and NICS Kraken XT5 Systems</i> Daniel Lucio, NICS, Donald Frederick, OLCF	How to login, compile, link, and run in batch or interactive systems on Kraken and/or Jaguar
2:00 – 2:30 PM	<i>Porting Applications to the XT5,</i> Daniel Lucio, NICS	Guidelines and tips on porting applications to the XT5
2:30-5:00 PM	Hands-on sessions on OLCF Jaguar and NICS Kraken XT5 systems OLCF, NICS staff	

#### Track II Schedule: JICS Auditorium

<b>Time</b>	<b>Topic</b>	<b>Description</b>
8:00-8:15 AM	Continental Breakfast	

<b>Time</b>	<b>Topic</b>	<b>Description</b>
8:30-9:30 AM	<i>Using a High-Level Library for Improving I/O Performance – ADIOS 101</i> Scott Klasky, OLCF	The Adaptable IO System (ADIOS) provides a simple, flexible way to describe data for writing, reading, or processing outside of a running simulation.
9:30-10:30 AM	<i>Introduction to Cray Compilers</i> Jeff Larkin, Cray	How to use features, compling, compiling options
10:30-10:45 AM	Break	
10:45-11:15 AM	<i>Monitoring Simulations and Processing Data on the Fly with Workflows</i> Norbert Podhorszki, OLCF	Introduces the Dashboard workflow system
11:15-Noon	<i>Using Debuggers on XT5 Systems: DDT</i> Oscar Hernandez, OLCF	How to use the DDT debugger on XT5 systems
Noon-1:00 PM	Working Lunch: <i>Cray Roadmap Update</i> John Levesque, Cray	
1:00-1:45 PM	<i>Using Debuggers on XT5 Systems: Totalview</i> Steven Gottbrath, Totalview	How to use the Totalview debugger on XT5 systems
1:45-5:00 PM	Hands-on session on Jaguar and Kraken XT5 Systems	

### **Tuesday, May 11, 2010: JICS Auditorium**

<b>Time</b>	<b>Topic</b>	<b>Description</b>
8:00-8:30 AM	Continental Breakfast	Allowing participants to discuss their work for the day's meeting, and continue working on previous day's materials
8:30-9:30 AM	<i>Specific Optimizations for the Cray XT5 Six-Core Systems</i> Jeff Larkin, Cray	Application code optimizations for XT5 systems
9:30-10:00 AM	Cray MPT: MPI on the Cray XT, Glenn Brook, NICS	An overview of MPI on the Cray XT, including a presentation of features and a discussion of strategies for improving performance.
10:00-10:15 AM	Break	

<b>Time</b>	<b>Topic</b>	<b>Description</b>
10:15-10:45 AM	<i>The Cray Scientific Libraries</i> Jeff Larkin, Cray	Cray Scientific Libraries provide a number of numerical packages for linear algebra, FFTs, etc.
10:45-11:15 AM	<i>Introduction to Lustre I/O</i> Dave Dillow and Doug Fuller, OLCF	Overview of Lustre parallel file system, including general do's and don'ts for using parallel I/O
11:15-Noon	<i>I/O and Lustre: An Application Programmer's Perspective</i> Lonnie Crosby, NICS	Lustre-specific I/O strategies from an application developer's perspective
Noon-1:00 PM	Working Lunch: <i>Try Anything Once: A Case Study Using NUCCOR</i> Rebecca Hartman-Baker, OLCF	
1:00 – 1:45 PM	Using the PGI Compilers on the XT5, Dave Norton, PGI	How to get the most from the PGI compilers on the XT5.
1:45-5:00 PM	Hands-on session on Jaguar and Kraken XT5 systems	

### Wednesday, May 12, 2010: JICS Auditorium

<b>Time</b>	<b>Topic</b>	<b>Description</b>
8:00-8:30 AM	Continental Breakfast	Allowing participants to discuss their work for the day's meeting, and continue working on previous day's materials
8:30-9:30 AM	<i>Analysis of Parallel Program Performance Using CrayPat, fMPI, and IPM</i> Haihang You, NICS	Useful features of CrayPat, fMPI and IPM for measuring parallel application performance will be discussed
9:30-10:30 AM	Hands-on session using CrayPat, fMPI, IPM	Attendees will use CrayPat, fMPI, or IPM performance measurement utilities to measure performance of their own applications
10:30-10:45 AM	Break	
10:45-Noon	<i>Parallel Analysis and Visualization on the Cray Linux Environment</i> Ross Toedte, and Dave Puigmire, OLCF Visualization Staff	Description of OLCF visualization resources – software, systems and staff
Noon-1:00 PM	Working Lunch: <i>OLCF User Group</i>	

<b>Time</b>	<b>Topic</b>	<b>Description</b>
1:00-5:00 PM	Hands-on session on Jaguar and Kraken XT5 Systems (for those not attending OLCF User Meeting)	